# New MCM Card – Hardware and software details

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This documents gives brief details about various types of MCM software packages developed in Telemetry lab and how they have been tested in lab and Antenna base. There are three types of MCM software packages designed and developed by Telemetry Lab.

New MCM card specifications: **Digital TTL Output :** 32 bits, **Monitor :** 64 bits of +/- **5V**
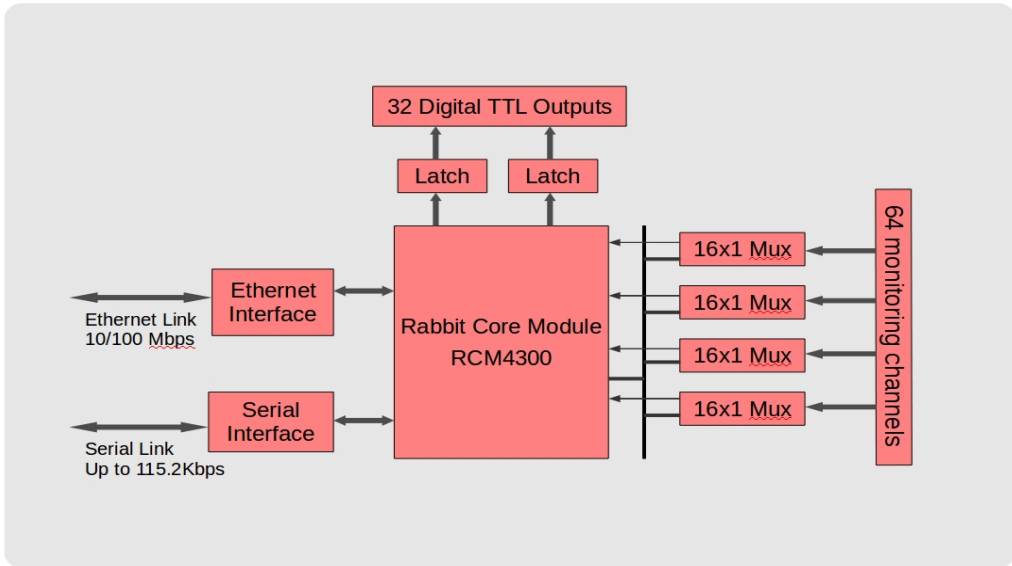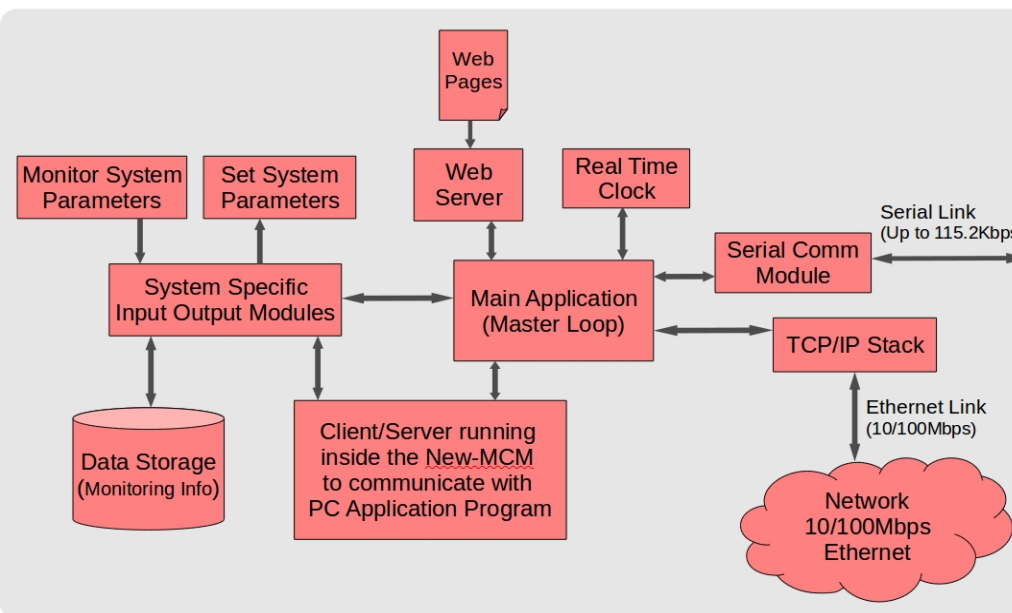
MCM software details

- **MCM software with Serial link:**
  In this software, we have ported the assembly code of the present MCM program developed for 80C535 micro-controller into dynamic C code for the Rabbit micro-controller. This program supports most of the present MCM commands and so, the new MCM card can replace the existing MCM card and can be controlled thro' online system. The commands are sent over serial port using RS-485 multi-drop protocol at 9.6kbps data rate.

  We have tested this MCM software with FE, ABR and Sentinel systems in lab and in the antenna shell thro' current Online system and TELESET-ABCCOM software chain.

- **MCM software with Ethernet link:**
  This software has been developed with simple and easy command structure and the relevant bit patterns required for various commands for controlling and monitoring any sub system (present and future) are generated in the rabbit core module itself by the software. The higher level Server/Client program has to send ASCII based commands using TCP/IP Network protocol. It also has web server and Telnet server built into the software and MCM card can be controlled thro' any web browser or telnet client.

  This new MCM software accepts ASCII based commands as mentioned below:

  IF SET BW XXXX YYYY - To set IF system bandwidth.
  IF MON SUM   - To get monitoring summary info from IF system
  LO MON RAW   - To get monitoring info from all channels (64) from LO system

IF MONITOR SUMMERY WINDOW		
BANDWIDTH	32MHz	32MHz
PRE-ATTENUATION	10 dB	10 dB
POST-GAIN	44.000000 dB	44.499996 dB
ALC	Off	Off

Set IF System

The new MCM card can be controlled thro' :
- TCP/IP Server program running on any PC using ASCII based commands.
- Any WEB browser running on Windows or Linux PC.
- Any Telnet client running on Windows or Linux PC.

This new MCM software also has been successfully tested with FE, ABR and Sentinel systems in lab and with ABR and Sentinel system in the antenna shell thro' web browser using web server based control and monitoring interface.

Note about wrapper layer software: The commands and responses are encoded in XML format in new CMS software for 15 mtr dish and an XML file is used for sending/receiving COMMANDS and RESPONSES from sub systems of antenna electronics. A new wrapper layer software for antenna PC has been developed which accepts these commands in XML format, parse it using standard libxml library, sends the parsed commands to low level subsystems in ASCII format, get back the responses, form the XML response file and sends it to the higher level CMS software.

WEB browser demo

The screen-shot of IF controlling form page – Web based Controlling of MCM. It is served by rabbit only to the authenticated user after receiving correct user-name and password.
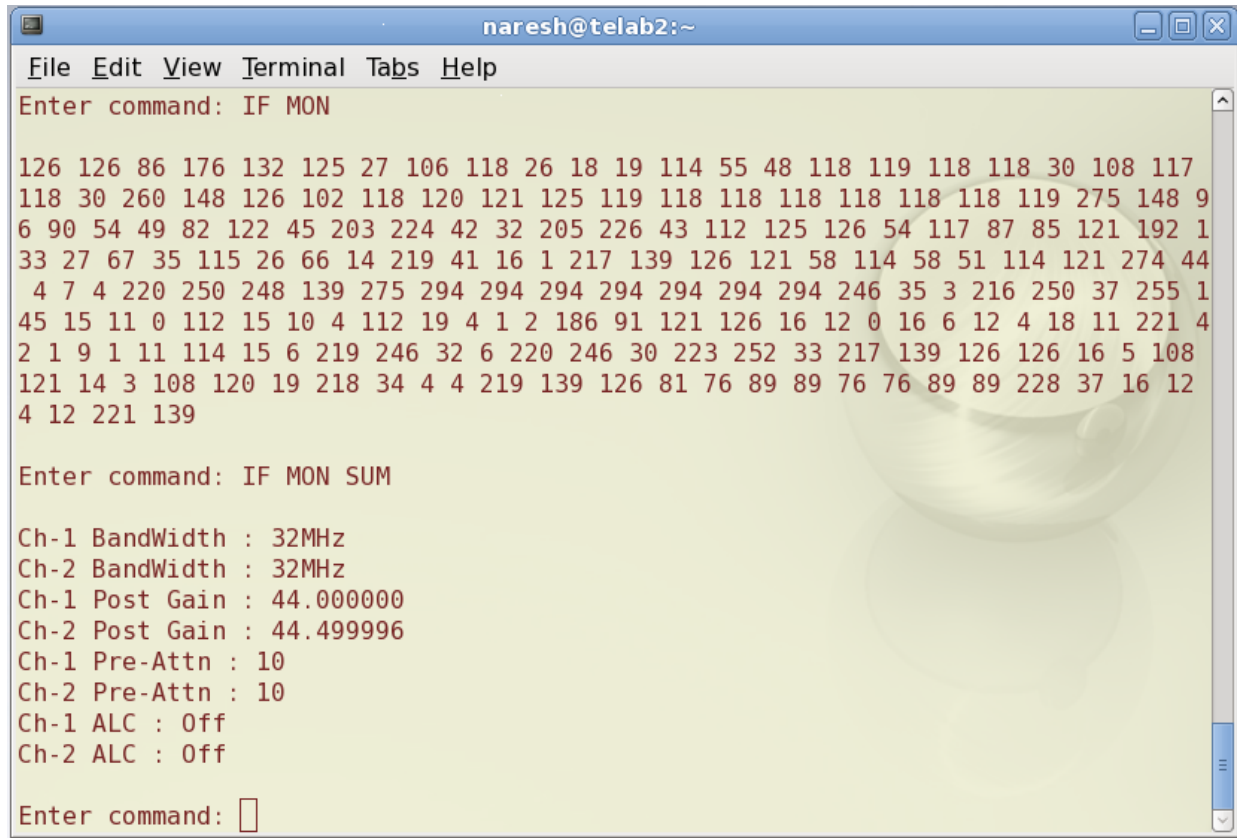
IF CONTROL WINDOW

BANDWIDTH	Choose Arg1 ⇕	Choose Arg2 ⇕
PRE-ATTENUATION	Choose Arg1 ⇕	Choose Arg2 ⇕
POST-GAIN	Choose Arg1 ⇕	Choose Arg2 ⇕
ALC	Choose Arg1 ⇕	Choose Arg2 ⇕

Submit

CURRENT STATUS

BANDWIDTH	32MHz	32MHz
PRE-ATTENUATION	10 dB	10 dB
POST-GAIN	44.000000 dB	44.499996 dB
ALC	Off	Off

Screen-shot of telnet client window running on user PC

(Console based Monitoring and Controlling of New MCM)

```
                              naresh@telab2:~                        _ □ ✕

 File  Edit  View  Terminal  Tabs  Help
Enter command: IF MON

126 126 86 176 132 125 27 106 118 26 18 19 114 55 48 118 119 118 118 30 108 117
118 30 260 148 126 102 118 120 121 125 119 118 118 118 118 118 118 119 275 148 9
6 90 54 49 82 122 45 203 224 42 32 205 226 43 112 125 126 54 117 87 85 121 192 1
33 27 67 35 115 26 66 14 219 41 16 1 217 139 126 121 58 114 58 51 114 121 274 44
 4 7 4 220 250 248 139 275 294 294 294 294 294 294 294 246 35 3 216 250 37 255 1
45 15 11 0 112 15 10 4 112 19 4 1 2 186 91 121 126 16 12 0 16 6 12 4 18 11 221 4
2 1 9 1 11 114 15 6 219 246 32 6 220 246 30 223 252 33 217 139 126 126 16 5 108
121 14 3 108 120 19 218 34 4 4 219 139 126 81 76 89 89 76 76 89 89 228 37 16 12
4 12 221 139

Enter command: IF MON SUM

Ch-1 BandWidth : 32MHz
Ch-2 BandWidth : 32MHz
Ch-1 Post Gain : 44.000000
Ch-2 Post Gain : 44.499996
Ch-1 Pre-Attn : 10
Ch-2 Pre-Attn : 10
Ch-1 ALC : Off
Ch-2 ALC : Off

Enter command: ▯
```